

In the Claims:

Claims 32-52 (canceled)

53. (New) An artificially constructed hybrid cytokine comprising a heterodimer of IL-7 and the  $\beta$ -chain of hepatocyte growth factor (HGF) and further comprising a low molecular oligosaccharide linker joining said IL-7 and the  $\beta$ -chain of HGF which cytokine supports the proliferation and differentiation of pre-pro- $\beta$ -cells.

54. (New) The artificially constructed hybrid cytokine dimer of claim 53 wherein said low molecular weight oligosaccharide is heparin sulfate-derived oligosaccharide.

55. (New) The artificially constructed hybrid cytokine dimer of claim 54 wherein said heparin sulfate has a molecular weight of less than about 3000kD.

56. (New) An artificially constructed hybrid cytokine complex comprising the complexed bioactive portions of IL-7 and the  $\beta$ -chain of HGF connected with a flexible linker selected from the group consisting of disulfide bridges, heparin and heparin sulfate derived oligosaccharides, bifunctional and chemical cross-linkers and polypeptide linkers, which cytokine complex supports the proliferation of pre-pro- $\beta$ -cells wherein said flexible linker is a low molecular weight oligosaccharide.

57. (New). The artificially constructed hybrid cytokine of claim 56 wherein said oligosaccharide is a heparin sulfate-derived oligosaccharide.

58. (New) The artificially constructed hybrid cytokine of claim 57 wherein said heparin sulfate-derived oligosaccharide has a molecular weight of less than about 3000kD.

59. (New) A biological preparation comprising an artificially constructed hybrid cytokine complex according to claim 56 and a pharmaceutically acceptable carrier.

60. (New) A process for producing a hybrid cytokine heterodimer of IL-7 and the  $\beta$ -chain of HGF which comprises

(a) obtaining the recombinantly-derived  $\beta$ -chain of hepatocyte growth factor (HGF) by:

(1) cloning HGF $\beta$  cDNA into mammalian or prokaryotic expression vectors and transfecting or transforming the vectors into mammalian or prokaryotic cells;

(2) growing the transfected or transformed cells *in vitro*;

(3) isolating purified  $\beta$ -chain of hepatocyte growth factor (HGF) by extraction from the cell culture;

(b) obtaining IL-7 from a recombinant or natural source; and

(c) linking the recombinantly-derived  $\beta$ -chain of hepatocyte growth factor (HGF) of step (a) with the IL-7 of step (b) by way of a low molecular weight oligosaccharide linker.

61. (New) A bimolecular protein complex (IL-7HGF $\beta$ ) comprising the artificially constructed hybrid cytokine complex according to claim 56 which supports the proliferation and differentiation of pre-pro- $\beta$ -cells.

62. (New) A bimolecular protein complex (IL-7/HGF $\beta$ ) according to claim 61

wherein said flexible linker is a low molecular weight oligosaccharide.

63. (New) A bimolecular protein complex (IL-7/HGF $\beta$ ) according to claim 62

wherein said oligosaccharide is a heparin sulfate-derived oligosaccharide.

64. (New) A bimolecular protein complex (IL-7/HGF $\beta$ ) according to claim 63

wherein said heparin sulfate-derived oligosaccharide has a molecular weight of less than about 3000kD.